

AMENDMENTS

In the Claims

The following is a marked-up version of the claims with the language that is underlined (“___”) being added and the language that contains strikethrough (“—”) being deleted:

1 1. (Currently amended) A structural panel ~~for forming sea walls, barrier walls and~~
2 ~~the like,~~ fabricated of synthetic resin material for driving into soils and forming walls, piers, and
3 dikes, comprising:
4 said structural panel being elongated and of constant size and shape along its length and
5 characterized by having been extruded lengthwise;
6 said structural panel including in cross section:
7 a central wall section including an inner surface, an outer surface, and opposed
8 side wall sections co-planar with said central wall section;
9 a male locking element disposed on and extending laterally from one of said side
10 wall sections, a female locking element disposed on and extending laterally from the
11 other of said side wall sections, said female locking element being configured to slidably
12 receive and retain said male locking element of a duplicate structural panel; and
13 first and a second strengthening flanges integrally formed on said inner surface,
14 said first and second strengthening flanges being both substantially perpendicular to said
15 central wall section and substantially parallel to each other, said first and second
16 strengthening flanges extending along said length of said structural panel and with said
17 central wall section forming a U-shape with the opening of the U-shape facing away from

18 said central wall section such that access is available between the strengthening flanges
19 along the length of the structural panel.

1 2. (Original) The structural panel of claim 1, further including a strengthening
2 member encased in said material and shielded from contact with the outside environment.

1 3. (Currently amended) The structural panel of claim 2, wherein said strengthening
2 member comprises metal, said strengthening member being U-shaped in cross section, and
3 wherein said strengthening member is disposed in said U-shape ~~a similarly U-shaped portion of~~
4 said structural panel formed by said first and second strengthening flanges and said central wall
5 section.

1 4. (Currently amended) The structural panel of claim 3, wherein said ~~strengthening~~
2 ~~member comprises solid sheet metal.~~ male and female locking elements are formed such that the
3 locking elements do not protrude beyond the plane of the outer surface of said central wall
4 section such that when a plurality of the structural panels are assembled in inner locking side
5 edge to side edge relationship to form a wall the wall will have a substantially planar outer
6 surface without the female locking elements protruding beyond the planar outer surface.

1 5. (Original) The structural panel of claim 4, wherein said strengthening member is
2 comprised of material selected from the group consisting of: steel, galvanized steel and
3 aluminum.

1 6. (Currently amended) The structural panel of claim 3, wherein said strengthening
2 flanges each include a distal edge and ~~, and further including~~ a secondary flange extending
3 ~~lengthwise~~ from said distal edge of each of said strengthening flanges and extending away from
4 the other strengthening flange such that said secondary flanges are substantially perpendicular to
5 said strengthening flanges.

1 7. (Currently amended) The structural panel of claim 3, further comprising:
2 a first plurality of retention apertures disposed along the length of said first strengthening
3 flange;
4 a second plurality of retention apertures disposed along the length of said second
5 strengthening flange; and
6 wherein said retention apertures are configured to receive retention means between said
7 first and second strengthening flanges, said retention means being configured to retain said
8 structural panel in a fixed position in relation to the soils into which said structural panel is
9 driven.

1 8. (Currently amended) A barrier wall comprising a series of structural panels of the
2 type described in claim 7, wherein said retention means further comprise:
3 an anchor bar configured to pass through one of said retention apertures of each said first
4 and second pluralities of retention apertures such that said anchor bar is disposed substantially
5 parallel to said central wall section and substantially perpendicular to said first and second
6 strengthening flanges;

7 an anchor sheet configured to extend between said first and second strengthening flanges
8 and be securely attached to said anchor bar; and
9 wherein said anchor sheet is connected to said structural panel by said anchor bar such
10 that said anchor sheet extends outwardly into the soils disposed behind said structural panel,
11 thereby securing said structural panel adjacent the soils.

1 9. (Original) The structural panel of claim 3, wherein said strengthening member is
2 comprised of expanded metal, said expanded metal defining a plurality of perforations.

1 10. (Currently amended) The structural panel of claim 9, further comprising:
2 a first plurality of retention apertures disposed along the length of said first strengthening
3 flange;
4 a second plurality of retention apertures disposed along the length of said second
5 strengthening flange; and
6 ~~wherein said retention apertures are configured to receive retention means, said retention~~
7 means received in said retention apertures being configured to extend from between said first and
8 second strengthening flanges and retain said structural panel in a fixed position in relation to the
9 soils into which the structural panel is driven.

1 11. (Original) The structural panel of claim 10, wherein said retention means further
2 comprise:

an anchor bar configured to pass through one of said retention apertures of each said first and second pluralities of apertures such that said anchor bar is disposed substantially parallel to said central wall section and substantially perpendicular to said first and second strengthening flanges;

an anchor sheet configured to be securely attached to said anchor bar; and wherein said anchor sheet is connected to said structural panel by said anchor bar such that said anchor sheet extends outwardly into the soils disposed behind said structural panel, thereby securing said structural panel adjacent the soils.

12. (Currently amended) The structural panel of claim 10 9, wherein each of said retention apertures of said first and second pluralities of retention apertures extends through one of said perforations of said expanded metal such that said strengthening member is encapsulated within said structural panel.

13. (Original) The structural panel of claim 9, wherein said expanded metal is comprised of material selected from the group consisting of: steel and galvanized steel.

14. (Currently amended) The structural panel of claim 2 1, wherein said strengthening member comprises fiberglass, said strengthening member being U-shaped in cross section, and wherein said strengthening member is disposed in a similarly U-shaped portion of said structural panel formed by said first and second strengthening flanges and said central wall section.

1 15. (Original) The structural panel of claim 14, wherein said strengthening member is
2 perforated.

1 16. (Currently amended) A method of installing a driven wall structure for retaining
2 soils, the wall including a means for retaining the wall in a fixed position relative to the soils, a
3 series of elongated structural panels, each said structural panel being elongated and of constant
4 size and shape along its length and shaped for being manufactured in one piece by extrusion,
5 each having an upper end portion and a lower end portion, opposed inner and outer surfaces,
6 elongated opposed side edges shaped for slidably connecting to the side edge of an adjacent
7 structural panel, and a pair of spaced, parallel ~~at least one~~ strengthening flanges extending from
8 the inner surface, comprising the steps of:
9 joining one of the opposed side edges of each structural panel to one of the opposed side
10 edges of a previously driven structural panel and driving the lower end portion of each structural
11 panel into the soil, thereby forming the wall structure;
12 attaching the means for retaining to the strengthening flanges of the structural panels; and
13 disposing soil ~~both~~ about the means for retaining and between the strengthening flanges
14 and adjacent the inner surfaces of the structural panels.

1 17. (Currently amended) The method of claim 16, wherein the ~~means for attaching~~
2 step of attaching the means for retaining to the strengthening flanges further comprises:
3 passing an anchor bar through the strengthening flanges such that the anchor bar is
4 substantially parallel to the wall structure;

5 securing an anchor sheet to the anchor bar, thereby securing the anchor sheet to the wall
6 structure; and

7 extending the anchor sheet outwardly from the inner surface of the wall structure such
8 that the anchor sheet is substantially perpendicular to the wall structure and rests on the existing
9 soil.

1 18. (Currently amended) The method of claim 16, wherein the ~~means for attaching~~
2 step of attaching the means for retaining to the strengthening flanges further comprises:

3 securing a plurality of anchor members to the strengthening flanges, each anchor member
4 having a proximal end secured to one of the strengthening flanges and a distal end extending
5 outwardly from the wall structure;

6 securing the distal end of each anchor member to an anchor wall, the anchor wall being
7 substantially parallel to the wall structure.

1 19. (Currently amended) A driven wall structure for retaining soil, comprising:

2 a plurality of structural panels, each said panel being elongated and of constant size and
3 shape along its length and shaped for being continuously manufactured, including in cross
4 section:

5 a central wall section including an inner surface[,] and an outer surface, opposed first and
6 second side wall sections on opposite sides of said central wall section co-extensive with said
7 central wall section and forming the structural panel with a planar outer surface ~~a first side wall~~
8 ~~section, and a second side wall section;~~

9 a first male locking element disposed on and extending laterally from said first side wall
10 section, a second female locking element disposed on and extending laterally from said second
11 side wall section, said first and second female locking elements being configured to slidably
12 receive and retain locking elements of similar structural panels and lock the structural panels
13 together in edge-to-edge relationship said male locking element; and

14 said first and second locking elements being formed such that the locking elements do not
15 protrude beyond the plane of the outer surface of said structural panel, such that when a plurality
16 of the structural panels are assembled in parallel inner locking side-edge to side-edge relationship
17 to form the driven wall structure, the driven wall structure has a substantially planar outer surface
18 without the locking elements protruding beyond the planar outer surface;

19 at least one strengthening flange integrally formed on said inner surface of said central
20 wall section, said strengthening flange being substantially perpendicular to said central wall
21 section and extending along said length of said structural panel;

22 ~~said plurality of structural panels being slidably connected by said male locking~~
23 ~~element and said female locking element of adjacent said structured panels;~~

24 ~~a plurality of anchor bars extending through said strengthening flanges such that said~~
25 ~~anchor bars are substantially parallel to both the wall structure and other said anchor bars;~~

26 a plurality of anchor sheets, each said anchor sheet being securely attached to said
27 strengthening flange of a panel ~~one of said anchor bars~~ and extending outwardly from said wall
28 structure; and

29 wherein the soil is disposed about said strengthening flange and about said anchor sheets
30 such that the weight of the soil retains the wall structure in a desired position.

1 20. (Original) The wall structure of claim 19, wherein said structural panel further
2 comprises a strengthening member comprised of expanded steel, said strengthening member
3 being substantially L-shaped in cross-section, and wherein said strengthening member is
4 disposed in a similarly L-shaped portion of said structural panel formed by said strengthening
5 flange and a portion of said central wall section.

1 21. (Original) The wall structure of claim 20, wherein said structural panel is
2 comprised of a material selected from the group consisting of: polyvinyl chloride, polypropylene
3 and polyethylene.

1 22. (Currently amended) The wall structure of claim 20, wherein said strengthening
2 member has a thickness of approximately .010 inches to .750 inches.

1 23. (Original) The wall structure of claim 19, wherein said structural panel further
2 comprises:
3 said strengthening flange includes a first strengthening flange and a second strengthening
4 flange forming a U-shape with said panel; and
5 a strengthening member comprised of metal, said strengthening member being U-shaped
6 in cross section, and wherein said strengthening member is disposed in a similarly U-shaped
7 portion of said structural panel formed by said first and second strengthening flanges and a
8 portion of said central wall disposed therebetween.

1 24. (Original) The wall structure of claim 23, wherein said strengthening member is
2 further comprised of expanded metal, said expanded metal defining a plurality of perforations,
3 and wherein each of said anchor bars extends through said perforations such that said
4 strengthening member is encapsulated within said structural panel.

1 25. (Original) The wall structure of claim 23, wherein said strengthening member is
2 comprised of a material selected from the group consisting of: steel and galvanized steel.

1 26. (Original) The wall structure of claim 19, wherein said structural panel further
2 comprises:
3 a first and a second strengthening flange; and
4 a strengthening member comprised of fiberglass, said strengthening member being U-
5 shaped in cross section, and wherein said strengthening member is disposed in a similarly U-
6 shaped portion of said structural panel formed by said first and second strengthening flanges and
7 a portion of said central wall disposed therebetween.

1 27. (Original) A barrier wall comprising:
2 a series of duplicate structural panels positioned in edge-to-edge interlocked relationship,
3 formed of resin material, and
4 a strengthening sheet encased within said resin material of each said panel so that said
5 sheet provides additional strength to said resin material and is shielded from contact with the
6 atmosphere.

1 28. (Original) The barrier wall of claim 27, wherein said strengthening sheet is
2 formed of metal, said sheet defining an array of perforations there through.

1 29. (Original) The barrier wall of claim 28, wherein said sheet is formed of expanded
2 metal.

1 30. (Currently amended) The barrier wall of claim 28, ~~wherein said connection means~~
2 ~~comprises~~ and further including
3 anchor bars mounted to said panels, and ~~said anchor sheets are~~ connected to said anchor
4 bars.

1 31. (Original) The barrier wall of claim 27, and further including
2 anchor sheets extending from said panels for burying in soil, and connection means
3 connecting said anchor sheets to said panels.

1 32. (Original) The barrier wall of claim 27, and further including
2 anchor sheets of open net configuration extending from said panels for burying in soil to
3 hold the barrier wall upright.

1 33. (New) A structural panel for driving into soils and forming with duplicate
2 structural panels a driven wall, said structural panel comprising:

3 a panel that is elongated and of constant size and shape along its length and shaped for
4 being continuously manufactured in one piece,

5 said panel including in cross section:

6 an inner surface and an outer surface opposed to said inner surface, and opposed
7 side edges;

8 elongated locking elements formed on said side edges configured to slidably
9 receive and retain a locking element of a duplicate structural panel and join the duplicate
10 structural panels in side-by-side relationship with the outer surfaces of the joined panels
11 aligned; and

12 said locking elements being formed such that the locking elements do not protrude
13 beyond the outer surface of the panel, such that when a plurality of the structural panels
14 are assembled in inner-locking side-edge to side-edge relationship with their outer
15 surfaces aligned to form a straight wall with an outer surface, the locking elements do not
16 protrude beyond the outer surface of the straight wall.

1 34. (New) The structural panel of claim 33, and further including:

2 strengthening flanges integrally formed on said inner surface of said panel
3 extending along the length of said panel at intervals spaced from each other and spaced
4 from said elongated locking elements and extending away from said inner surface, and

5 said strengthening flanges together with a portion of said panel forming a U-shape
6 with the opening of the U-shape facing away from said inner surface such that access is
7 available between the strengthening flanges along the length of the structural panel.

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- 2 35. (New) The structural panel of claim 34 and further including:
- 3 secondary strengthening flanges formed on said strengthening flanges, said
- 4 secondary strengthening flanges extending away from each other.
- 1 36. (New) The structural panel of claim 33, and further including:
- 2 a strengthening member positioned in said U-shape and encased in said material
- 3 and protected by said material from contact with other objects.